



## AAC Science Scope and Sequence

The AAC Science Curriculum presents students with hands-on experiences and concepts which help them to understand the world around them. The basis is from the Next Generation Science Standards (NGSS) from K-12 and the California Preschool Learning Foundations (KG1 & PK). The science coursework is combined with other subject areas, whenever possible, to demonstrate to students that science is a part of everything. In high school, students will have choices in grades 11 and 12, depending on whether they take IB or not. In 12th grade students who qualify can take AP Environmental Science and IB students can take IB Biology and/or IB Physics.

<b>12th Grade Modern Science</b>				
<b>Title</b>	Ethics and Astronomy	General Biology Overview	Physical Science Overview	Health and Nutrition
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Analyze modern issues from a scientific and ethical point of view</li> <li>- Create arguments based on research on various lifespan of celestial bodies</li> <li>- Present (orally and written) arguments and defend them as well</li> <li>- Judge others' arguments based on their merits and presentation</li> <li>- Analyze data from astronomy and come to conclusions</li> <li>- Present information about a topic in astronomy</li> <li>- Make and explain predictions based on current models in astronomy</li> <li>- Understand basic astronomy and why it is worthwhile to</li> </ul>	<ul style="list-style-type: none"> <li>- Understand and be able to explain (verbally and in writing) the basic concepts of genetics and evolution.</li> <li>- Solve genetics problems using a Punnett Square and make accurate predictions for offspring based on parental geno and phenotypes</li> <li>- Explain the factors that drive evolution and the evidence which supports it.</li> <li>- Compare and contrast evolution with creationism and other beliefs.</li> <li>- Identify the basic organelles of a cell and explain their function.</li> <li>- Understand the basic tenets of life</li> <li>- Create a model of a plant or animal cell that accurately</li> </ul>	<ul style="list-style-type: none"> <li>- Understand the basic ideas in physics, including Newton's three laws and the fundamental vocabulary.</li> <li>- Solve simple physics problems and make accurate predictions on movement</li> <li>- Calculate items using basic physics</li> <li>- Compare and contrast Newtonian's physics to the theories of Einstein</li> <li>- Identify the parts of an atom and understand the structure</li> <li>- Use the periodic table, at least the first three rows</li> <li>- Balance chemical equations</li> <li>- Differentiate among the states of matter and the properties of each</li> <li>- Understand basic chemical</li> </ul>	<ul style="list-style-type: none"> <li>- Analyze personal health characteristics and suggest ways to improve</li> <li>- Compare and contrast various nutritional choices for benefits</li> <li>- Understand the importance of exercise and sleep on one's health</li> <li>- Present about health to a group of ES students</li> <li>- Plan a healthy diet built around best choices and the most current information</li> <li>- Debate the benefits of different foods and/or different types of exercise on one's health</li> <li>- Understand the importance of reducing stress, building positive relationships and avoiding alcohol and drugs on</li> </ul>

	<p>pursue</p> <ul style="list-style-type: none"> <li>- Investigate the orbital motion of satellite</li> </ul>	<p>represents the features.</p> <ul style="list-style-type: none"> <li>- Explain the movements of continental and Oceanic crust</li> <li>- Explore structure of the early earth</li> </ul>	<p>terms</p>	<p>one's health</p>
<b>Standards</b>	<p>HS-ESS1-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.</p> <p>HS-ESS1-2. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.</p> <p>HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.</p> <p>HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.</p>	<p>HS-ESS1-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.</p> <p>HS-ESS1-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.</p> <p>HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.</p> <p>HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedback that causes changes to other Earth's systems.</p> <p>HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.</p> <p>HS-LS2-8. Evaluate the evidence</p>	<p>HS-PS2-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.</p> <p>.</p> <p>HS-PS3-5. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.</p> <p>HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p>HE.912.SUA.1.1 Differentiate between various levels of alcohol consumption. And its effect on the body</p> <p>HE.912.SUA.1.2 Analyze how moderate and excessive alcohol consumption can contribute to risky, unsafe behaviors and consequences</p> <p>HE.912.SUA.1.5 Analyze the physical, mental/emotional, social and legal consequences of drugs</p> <p>HE.912.CE.2.2 Evaluate strategies that assist with organization, managing stress and exceptions</p> <p>HE.68.SUA.5.5 Encourage peers to model healthy choices related to goals, communication, friendship, food management, and peer pressure</p>

		<p>for the role of group behavior on individual and species' chances to survive and reproduce.</p> <p>HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.</p>		
	<b>12th Grade AP Environmental Science</b>			
<b>Title</b>	Environmental Science, Global Change and Biodiversity	Ecosystems, Populations, Energy	Air Pollution, Human Health Earth's Resources and Use	Waste, Water Pollution, and Citizen Science
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>Describe environmental concepts and processes.</li> <li>Identify a testable hypothesis or scientific question for an investigation.</li> <li>Identify a research method, design, and/or measure used.</li> <li>Describe patterns or trends in data.</li> <li>Determine an approach or method aligned with the problem to be solved.</li> <li>Describe disadvantages,</li> </ul>	<ul style="list-style-type: none"> <li>Describe characteristics of an environmental concept, process, or model represented visually.</li> <li>Explain relationships between different characteristics of environmental concepts, processes, or models represented visually.</li> <li>Describe relationships among variables in data represented.</li> <li>Apply appropriate mathematical relationships</li> </ul>	<ul style="list-style-type: none"> <li>Identify the author's claim.</li> <li>Explain how environmental concepts and processes represented visually relate to broader environmental issues.</li> <li>Describe an aspect of a research method, design, and/or measure used.</li> <li>Explain patterns and trends in data to draw conclusions.</li> <li>Calculate an accurate numeric answer with appropriate units.</li> </ul>	<ul style="list-style-type: none"> <li>Explain environmental concepts, processes, or models in applied contexts.</li> <li>Interpret experimental data and results in relation to a given hypothesis.</li> <li>Describe potential responses or approaches to environmental problems.</li> <li>Justify a proposed solution, by explaining potential advantages.</li> </ul>

	advantages, or unintended consequences for potential solutions.	to solve a problem, with work shown (e.g., dimensional analysis). <ul style="list-style-type: none"> <li>Use data and evidence to support a potential solution.</li> </ul>	<ul style="list-style-type: none"> <li>Make a claim that proposes a solution to an environmental problem in an applied context.</li> </ul>	
<b>Standards (AP Topics)</b>	2.1-2.7, 5.11 -5.12, 9.3 - 9.10	1.1 - 1.11, 3.1-3.9, 4.4 - 4.9, 5.10, 6.1 - 6.13	7.1 - 7.7, 8.3, 8.7 - 8.8, 8.12 - 8.15, 9.1 - 9.2 4.1 - 4.3, 5.1 - 5.17	5.5, 5.13, 8.1- 8.11, 8.14 - 8.15
<b>11<sup>th</sup> Grade Chemistry</b>				
<b>Title</b>	<b>Biochemistry Ecosystems and Heredity</b>		<b>Chemistry 2 Conservation of energy and equilibrium</b>	
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>Interpret and draw line graphs</li> <li>Use evidence from line graphs to support an argument</li> <li>Use evidence from articles to support an argument in the form of a debate or essay</li> </ul>	<ul style="list-style-type: none"> <li>Determine probability of a scenario occurring using tables</li> <li>Convert between percentage and fractions</li> <li>Use evidence from case studies to defend an argument</li> <li>Identify sources of information as reliable or unreliable</li> <li>Use reliable sources of information to defend an</li> </ul>	<ul style="list-style-type: none"> <li>Interpret and draw line graphs</li> <li>Use evidence from line graphs to support an argument</li> <li>Use evidence from a diagram to support an argument</li> <li>Naming chemical compounds</li> <li>Writing chemical formula</li> <li>Using the periodic table to predict how atoms will react</li> </ul>	<ul style="list-style-type: none"> <li>Balance equations</li> <li>Calculate percent yield</li> <li>Use ratios</li> <li>Use algebraic equations for calculations</li> <li>Manipulate equations to calculate different variables</li> <li>Use diagrams (mole map) to help in solving problems</li> <li>Use diagrams to help explain how a problem was solved</li> </ul>
<b>Required Lab Activities</b>	<ul style="list-style-type: none"> <li>Catch and release sampling lab</li> <li>Quadrats lab</li> </ul>	<ul style="list-style-type: none"> <li>Evolution Case Study Lab</li> </ul>	<ul style="list-style-type: none"> <li>Reactivity series Lab (metals in HCl)</li> <li>Types of reaction lab (single displacement,</li> </ul>	<ul style="list-style-type: none"> <li>Conservation of mass lab</li> <li>Percent Yield lab</li> <li>pH lab</li> <li>Acid Base Titration Lab</li> </ul>

			<p>double displacement, decomposition, synthesis and combustion)</p> <ul style="list-style-type: none"> <li>- Rate of reaction lab</li> <li>- Factors affecting rate of reaction lab</li> </ul>	
<b>Standards</b>	<p>HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales</p> <p>HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales</p> <p>HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p> <p>HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*</p>	<p>HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</p> <p>HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.</p> <p>HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors</p> <p>HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.</p> <p>HS-LS4-2. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to</p>	<p>HS-PS1-8. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.</p> <p>HS-PS1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p>HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy</p>	<p>HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p> <p>HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p> <p>HS-PS1-6. Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.*</p>

	<p>HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.</p> <p>HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*</p>	<p>mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment</p> <p>HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.</p>		
<b>10th Grade Physics</b>				
<b>Title</b>	HS.Forces and Motions Interactions	HS.Energy	Electricity and Magnetism	HS.Waves and Electromagnetic Radiation
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Draw FBD</li> <li>- Graph one and two dimensional motion</li> <li>- Motion</li> <li>- Verify The Newton laws</li> <li>- Define the effect of momentum and impulse</li> <li>- Verify momentum conservation</li> <li>- Carry out an inquiry based lab or practical using scientific method</li> <li>- Formulate a research question</li> <li>- Write the background information</li> </ul>	<ul style="list-style-type: none"> <li>- Describe and explain the exchange between potential energy and internal energy</li> <li>- Determine the energy stored in a spring</li> <li>- Observe and explain energy conversions in real world</li> <li>- Compare the power developed when different work is done at different rates</li> <li>- Verify the gas laws</li> <li>- Define thermal equilibrium, thermal expansion and temperature</li> </ul>	<ul style="list-style-type: none"> <li>- Draw and interpret electric field with relation to magnetic fields</li> <li>- Verify Newton laws, and coulomb's law in the application of electrostatic forces between objects</li> <li>- Measure current and voltage in a circuit</li> <li>- Explain electric induction</li> <li>- Calculate power in terms of energy and time</li> <li>- Interpret graphs of voltage against current</li> </ul>	<ul style="list-style-type: none"> <li>- Interpret waveforms with various characteristics</li> <li>- Identify nodes and antinodes in standing waves</li> <li>- Distinguish between longitudinal and transverse waves</li> <li>- Predict the behavior of particles waves</li> <li>- Determine the speed of sound in air</li> <li>- Sketch and interpret the wavelength, time, frequency, and the wave speeds in the</li> </ul>

	<ul style="list-style-type: none"> <li>- Use evaluation, and limitation for the investigation such as error bars, and uncertainty calculations</li> <li>- Analyze and interpret data</li> <li>- Conclude and communicate the findings of the research question</li> </ul>		<ul style="list-style-type: none"> <li>- Determine the universal gravitational force on the planetary circular motion</li> </ul>	<ul style="list-style-type: none"> <li>- displacement time graph</li> <li>- Investigate digital transmission processes and its impact on storing information</li> <li>- Explain radiation and decaying processes of objects through time</li> </ul>
<b>Required Lab Activities</b>	<ul style="list-style-type: none"> <li>- Pendulum lab</li> <li>- Measuring Forces using table force</li> <li>- Free fall Lab pro</li> <li>- Sport Projectile motion</li> </ul>	<ul style="list-style-type: none"> <li>- Thermal Gas Laws Phet-Sim</li> <li>- Research project on energy conversion &amp; conservation</li> </ul>	<ul style="list-style-type: none"> <li>- Measuring current and resistivity in a circuit lab</li> <li>- Construct a circuit lab</li> <li>- Case study on electrical Induction</li> </ul>	<ul style="list-style-type: none"> <li>- Measuring the speed of sound lab</li> <li>- Case study on wave communication</li> <li>- Investigating the characteristics, and optics of waves</li> </ul>
<b>Standards</b>	<p>HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.</p> <p>HS-PS2-2. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</p> <p>HS-PS2-3. Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a</p>	<p>HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p> <p>HS-PS3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).</p> <p>HS-PS3-3. Design, build, and refine</p>	<p>HS-PS2-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.</p> <p>HS-PS2-5. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.</p> <p>HS-PS3-5. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the</p>	<p>HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p> <p>HS-PS4-2. Evaluate questions about the advantages of using a digital transmission and storage of information.</p> <p>HS-PS4-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more</p>

	macroscopic object during a collision.*	a device that works within given constraints to convert one form of energy into another form of energy.*  HS-PS3-4. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).	changes in energy of the objects due to the interaction.	useful than the other.  HS-PS4-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.  HS-PS4-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.*
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**9<sup>th</sup> Grade Biology**

<b>Title</b>	HS.Structure and Function	HS.Matter and Energy in Organisms and Ecosystems	HS.Interdependent Relationships in Ecosystems	HS.Inheritance and Variation of Traits
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Draw a scale diagram</li> <li>- Use standard international units and convert between them (Tera all the way down to pico)</li> <li>- Measure length</li> <li>- Use scientific notation</li> <li>- Use a microscope</li> <li>- Draw labeled diagrams of observations</li> <li>- Calculate magnification</li> <li>- Calculate uncertainty in a measurement</li> </ul>	<ul style="list-style-type: none"> <li>-Use flow charts to describe processes</li> <li>-Create a model to describe processes</li> <li>-Interpret and draw data tables</li> <li>-Interpret and draw bar charts</li> <li>-Use evidence from bar charts to support an argument</li> <li>-Use evidence from articles to support an argument</li> </ul>	<ul style="list-style-type: none"> <li>- Interpret and draw line graphs</li> <li>- Use evidence from line to support an argument</li> <li>- Use evidence from articles to support an argument (debate and essay)</li> <li>- Using statistics to measure significant difference (limit to bell curve, standard deviation and student t-tests)</li> </ul>	<ul style="list-style-type: none"> <li>- Determine probability of a scenario occurring using tables</li> <li>- Convert between percentage and fractions</li> <li>- Use evidence from case studies to defend an argument (debate and essay)</li> </ul>
<b>Required</b>	- DNA extraction lab	- Factors affecting photosynthesis	- Catch and release sampling	- Mitosis microscope lab



<p><b>Lab Activities</b></p>	<ul style="list-style-type: none"> <li>- Letter “e” microscope lab</li> <li>- Human cheek and onion skin cell lab</li> <li>- Human tissues microscope lab</li> <li>- Lamb heart dissection</li> <li>- Heart rate and exercise lab</li> </ul>	<p>lab</p> <ul style="list-style-type: none"> <li>- Types of macromolecule lab</li> <li>- Enzymes lab</li> <li>- Respiration of peas lab</li> </ul>	<p>lab</p> <ul style="list-style-type: none"> <li>- Quadrats lab</li> </ul>	<ul style="list-style-type: none"> <li>- Meiosis microscope lab</li> <li>- Evolution Case Study</li> </ul>
<p><b>Standards</b></p>	<p>HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.</p> <p>HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>	<p>HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.</p> <p>HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.</p> <p>HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.</p> <p>HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.</p> <p>HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an</p>	<p>HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.</p> <p>HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.</p> <p>HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p> <p>HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and</p>	<p>HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</p> <p>HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.</p> <p>HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.</p> <p>HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.</p>

		ecosystem.  HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	biodiversity.*  HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.  HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*	
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<b>Title</b>	<b>8<sup>th</sup> Grade: Physical Science</b>			
<b>Title</b>	Matter and its interactions	Energy	Forces and Interactions	Waves
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Draw labeled diagrams to support written responses</li> <li>- Make observations and inference</li> <li>- Determine if statements are observations or inference and justify the answer</li> <li>- Identify control, dependent and independent variables</li> </ul>	<ul style="list-style-type: none"> <li>- Draw and interpret bar graphs</li> <li>- Draw and interpret line graphs</li> <li>- Convert between SI units</li> <li>- Use formula triangles to rearrange equations</li> <li>- Use energy transfer diagrams to show the conservation of energy in a system</li> <li>- Plan an investigation including</li> </ul>	<ul style="list-style-type: none"> <li>- Draw and interpret line graphs</li> <li>- Convert between SI units</li> <li>- Use formula triangles to rearrange equations</li> <li>- Use energy transfer diagrams to show the conservation of energy in a system</li> <li>- Plan an investigation</li> </ul>	<ul style="list-style-type: none"> <li>- Draw labeled diagrams to support written responses</li> <li>- Draw and interpret line graphs</li> <li>- Convert between SI units</li> <li>- Use formula triangles to rearrange equations</li> <li>- Use evidence from research to support a written argument</li> </ul>

	<ul style="list-style-type: none"> <li>- Write a hypothesis</li> <li>- Write a short summary of a scientific article</li> <li>- Organize data into a table</li> <li>- Write a conclusion for a lab activity</li> <li>- Measure mass, length and density</li> </ul>	<p>the variables, hypothesis, materials and method</p> <ul style="list-style-type: none"> <li>- Write a lab report including an introduction, hypothesis, variables, materials, method, observations and conclusion</li> <li>- Use evidence from research to support a written argument</li> </ul>	<p>including the variables, hypothesis, materials and method</p> <ul style="list-style-type: none"> <li>- Write a lab report including an introduction, hypothesis, variables, materials, method, observations, conclusion and evaluation</li> </ul>	<p>in the form of an essay</p>
<b>Required Lab Activities</b>	<ul style="list-style-type: none"> <li>- Virtual lab on states of matter</li> <li>- Chemical reactions lab</li> <li>- Physical &amp; Chemical properties lab</li> </ul>	<ul style="list-style-type: none"> <li>- Endo/Exo thermal reaction lab</li> <li>- Conservation of mass lab</li> <li>- Conservation of energy lab</li> <li>- Design hot and cold packs (Thermal energy lab)</li> </ul>	<ul style="list-style-type: none"> <li>- Tag and war lab (balanced &amp; unbalanced forces)</li> <li>- Friction forces lab</li> <li>- Collision track lab</li> <li>- Electro-magnetic lab</li> </ul>	<ul style="list-style-type: none"> <li>- Wave sim lab</li> <li>- Research Project on wave communication</li> </ul>
<b>Standards</b>	<p>MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.</p> <p>MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.</p> <p>MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.</p>	<p>MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</p> <p>MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.</p> <p>MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.*</p>	<p>MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.*</p> <p>MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.</p> <p>MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.</p>	<p>MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</p> <p>MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</p> <p>MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.</p>

	<p>MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.</p> <p>MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.</p> <p>MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.*</p>	<p>MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.</p> <p>MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.</p>		
<b>7th Grade: Earth Science</b>				
<b>Title</b>	Earth's Place in the Universe	Earth's Structure	Earth's Systems	Earth and Human Activity
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Draw labeled diagrams</li> <li>- Make labeled models</li> <li>- Draw flowcharts</li> <li>- Draw and label timelines</li> <li>- Differentiate between cause and effect</li> <li>- Differentiate between observation and inference</li> </ul>	<ul style="list-style-type: none"> <li>- Present evidence to support an argument</li> <li>- Use evidence to support an argument in a debate</li> <li>- Use evidence to support an argument in a short written report</li> <li>- Use the passive voice and academic language in written answers</li> </ul>	<ul style="list-style-type: none"> <li>- Use diagrams and flow charts to illustrate a point in a presentation</li> <li>- Use diagrams and flow charts to illustrate a point in a written report</li> <li>- Apply knowledge by describing hypothetical scenarios (example how would a hurricane form over Casa?)</li> </ul>	<ul style="list-style-type: none"> <li>- Use diagrams and flow charts to illustrate a point in a written report</li> <li>- Use evidence to support an argument in a short written report</li> <li>- Use the passive voice and academic language in written answers</li> <li>- Use evidence from research to write a point of view essay</li> </ul>

<b>Required Lab Activities</b>	<ul style="list-style-type: none"> <li>- Scale Modeling of Solar System</li> <li>- Case study of earth's development</li> </ul>	<ul style="list-style-type: none"> <li>- Modeling different tectonic plates boundaries</li> <li>- Identifying various types of rock (compare between two igneous rocks types)</li> </ul>	<ul style="list-style-type: none"> <li>- Making a cloud in a bottle</li> <li>- Convection, conduction &amp; radiation lab</li> </ul>	<ul style="list-style-type: none"> <li>- Case study of global warming &amp; environmental issues</li> <li>- Case study Metal -Ore extraction</li> </ul>
<b>Standards</b>	<p>MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.</p> <p>MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system</p> <p>MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.</p> <p>MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history</p>	<p>MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process</p> <p>MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p> <p>MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions</p>	<p>MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.</p> <p>MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.</p> <p>MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates</p>	<p>MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.</p> <p>MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p> <p>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*</p> <p>MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.</p>

				MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
	<b>6<sup>th</sup> Grade: Life Science &amp; Health-Nutrition</b>			
<b>Title</b>	Body systems & Nutrition (Plants and Animals)	Cells	Inheritance and Reproduction	Evolution
<b>Quarter</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Making conclusions based on provided information</li> <li>- Identifying control, dependent and independent variables</li> <li>- Describing the scientific method</li> <li>- Following the scientific method</li> <li>- Write a simple lab report using a template (include conclusion)</li> </ul>	<ul style="list-style-type: none"> <li>- Draw and label diagrams</li> <li>- Determine the function of a structure based evidence and justify the answer</li> <li>- Present research information to justify a conclusion</li> </ul>	<ul style="list-style-type: none"> <li>- Draw and label diagrams</li> <li>- Draw and label flow charts</li> <li>- Use information from charts to support a written argument</li> <li>- Respond to hypothetical scenarios using evidence to support the response.</li> </ul>	<ul style="list-style-type: none"> <li>- Interpreting bar graphs</li> <li>- Drawing bar graphs</li> <li>- Reading fractions and percentages (ratios)</li> <li>- Comparing and contrasting different evidence to support an argument in a written form</li> <li>- Use numerical data to support a written argument</li> </ul>
<b>Required Lab Activities</b>	<ul style="list-style-type: none"> <li>- Digestion of Starches</li> <li>- Virtual Lab factors affecting photosynthesis</li> </ul>	<ul style="list-style-type: none"> <li>- Microscope lab</li> <li>- Plant and animal microscope lab</li> </ul>	<ul style="list-style-type: none"> <li>- Flower dissection lab (comparing different flower types)</li> <li>- DNA Extraction Lab</li> </ul>	<ul style="list-style-type: none"> <li>- Lab report on Fossil records</li> <li>- Case study of evolutionary processes</li> </ul>
<b>Standards</b>	MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.(Focus on digestive system and nutrition)	MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	MS-LS3-1. Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Students who demonstrate understanding can: MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the

	<p>MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms (Plant Nutrition)</p> <p>MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. (Nutrition standard)</p> <p>MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<p>MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p>	<p>MS-LS3-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. (Focus on Sex -Ed)</p> <p>MS-LS1-4. Use arguments based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.</p> <p>MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.</p>	<p>history of life on Earth under the assumption that natural laws operate today as in the past.</p> <p>MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</p> <p>MS-LS4-3. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</p> <p>MS-LS4-4. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</p> <p>MS-LS4-5. Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p>
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				MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.
<b>5<sup>th</sup> Grade Science</b>				
<b><u>Engineering Design</u></b>				
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.				
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.				
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.				
	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p style="text-align: center;"><b>Structure and Properties of Matter</b></p> <p>Develop a model to describe that matter is made of particles too small to be seen.</p> <p>Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</p> <p>Make observations and measurements to identify materials based on their</p>	<p style="text-align: center;"><b>Matter and Energy in Organisms and Ecosystems</b></p> <p>Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p> <p>Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p>Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p style="text-align: center;"><b>Earth's Systems</b></p> <p>Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p>Obtain and combine information about ways individual communities use science ideas</p>	<p style="text-align: center;"><b>Space Systems: Stars and the Solar System</b></p> <p>Support an argument that the gravitational force exerted by Earth on objects is directed down.</p> <p>Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</p> <p>Represent data in graphical displays to reveal patterns of daily changes in length and</p>



	<p>properties.</p> <p>Conduct an investigation to determine whether the mixing of two or more substances results in new substances.</p>		<p>to protect the Earth's resources and environment</p>	<p>direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>
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**4<sup>th</sup> Grade Science**

**Engineering Design**

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p align="center"><b>Changes on Earth's Surface</b></p> <p>Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p> <p>Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation</p> <p>Analyze and interpret data from maps to describe patterns of Earth's features.</p>	<p align="center"><b>Energy, Motion, and Collisions</b></p> <p>Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>Ask questions and predict outcomes about the changes in energy that occur when objects collide. (Collision is energy being transferred.)</p>	<p align="center"><b>Transfer of Energy and Information</b></p> <p>Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. (Used with sound and light.)</p> <p>Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.</p> <p>Develop a model of waves to describe patterns in terms of</p>	<p align="center"><b>The Structure and Functions of Organisms</b></p> <p>Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p>Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways</p>

	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. (Used with collisions)	<p>amplitude and wavelength and that waves can cause objects to move.</p> <p>Generate and compare multiple solutions that use patterns to transfer information.</p> <p>Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p>	
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**3<sup>rd</sup> Grade Science**

**Engineering Design**

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p align="center"><b>Inheritance and Variation of Traits: Life Cycles and Traits</b></p> <p>Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.</p> <p>Analyze and interpret data to provide evidence that plants and</p>	<p align="center"><b>Interdependent Relationships in Ecosystems</b></p> <p>Construct an argument that some animals form groups that help members survive.</p> <p>Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</p>	<p align="center"><b>Weather and Climate</b></p> <p>Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.</p> <p>Obtain and combine information to describe climates in different regions of the world.</p>	<p align="center"><b>Forces and Interactions</b></p> <p>Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.</p> <p>Make observations and/or measurements of an object's motion to provide evidence that a</p>

	<p>animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</p> <p>Use evidence to support the explanation that traits can be influenced by the environment</p> <p>Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</p>	<p>Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</p> <p>Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</p>	<p>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</p>	<p>pattern can be used to predict future motion.</p> <p>Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.</p> <p>Define a simple design problem that can be solved by applying scientific ideas about magnets.</p>
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**2<sup>nd</sup> Grade Science**

**Engineering Design K-2-ETS1**

Ask questions, make observations, gather information about a situation people want to change to define a simple problem that can be solved through the development of a new improved object or tool.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p><b>Biodiversity and Habitats</b></p> <p>Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p>Obtain, evaluate and communicate information about patterns of living things in</p>	<p><b>Interdependent Relationships in Ecosystems</b></p> <p>Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p> <p>Develop a simple model that mimics the function of an animal in</p>	<p><b>Earth's Systems: Processes that Shape the Earth</b></p> <p>Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p> <p>Compare multiple solutions</p>	<p><b>Structure and Properties of Matter</b></p> <p>Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>

	<p>different habitats.</p> <p>Emphasize the diversity of living things in land and water habitats. Examples of patterns in habitats could include descriptions of temperature or precipitation and the types of plants and animals found on land habitats.</p>	<p>dispersing seeds or pollinating plants.</p> <p>Make observations of plants and animals to compare the diversity of life in different habitats.</p>	<p>designed to slow or prevent wind or water from changing the shape of the land.</p>	<p>Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p> <p>Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p> <p>Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p>
<b>1<sup>st</sup> Grade Science</b>				
<b><u>Engineering Design</u> K-2-ETS1</b>				
<p>Ask questions, make observations, gather information about a situation people want to change to define a simple problem that can be solved through the development of a new improved object or tool.</p> <p>Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p>Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>				
	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p style="text-align: center;"><b>Waves: Light and Sound</b></p> <p>Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p>	<p style="text-align: center;"><b>Structure, Function, and Information Processing</b> <b>*Focus on Plants</b></p> <p>Use materials to design a solution to a human problem by mimicking how plants use their external parts to help them survive, grow, and</p>	<p style="text-align: center;"><b>Structure, Function, and Information Processing</b> <b>*Focus on Animals</b></p> <p>Use materials to design a solution to a human problem by mimicking how animals use their external parts to help them</p>	<p style="text-align: center;"><b>Space Systems: Patterns and Cycles</b></p> <p>Use observations of the sun, moon, and stars to describe patterns that can be predicted.</p> <p>Make observations at different</p>

	<p>Make observations to construct an evidence-based account that objects can be seen only when illuminated.</p> <p>Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</p> <p>Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p>	<p>meet their needs.</p> <p>Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p> <p>Make observations to construct an evidence-based account that young plants are like, but not exactly like, their parents.</p>	<p>survive, grow, and meet their needs.</p> <p>Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p> <p>Make observations to construct an evidence-based account that young animals are like, but not exactly like, their parents.</p>	<p>times of year to relate the amount of daylight to the time of year.</p>
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**Kindergarten (KG2) Science**

**Engineering Design K-2-ETS1**

Ask questions, make observations, gather information about a situation people want to change to define a simple problem that can be solved through the development of a new improved object or tool.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p align="center"><b>Weather and Climate</b></p> <p>Make observations to determine the effect of sunlight on Earth's surface.</p> <p>Use tools and materials to design and build a structure that</p>	<p align="center"><b>Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment</b></p> <p>*Focus on Habitats and animal/plant relationships in those habitats</p> <p>Use observations to describe</p>	<p align="center"><b>Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment</b></p> <p>*Focus on adaptation of animals/plants in their environment.</p> <p>*Focus on human impact on habitats</p>	<p align="center"><b>Forces and Interactions: Pushes and Pulls</b></p> <p>Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p>

	<p>will reduce the warming effect of sunlight on an area.</p> <p>Use and share observations of local weather conditions to describe patterns over time.</p> <p>Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p>	<p>patterns of what plants and animals (including humans) need to survive.</p> <p>Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</p>	<p>Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</p> <p>Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p>	<p>Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>
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**Kindergarten (KG1) Science**

**Engineering Design K-2-ETS1**

Ask questions, make observations, gather information about a situation people want to change to define a simple problem that can be solved through the development of a new improved object or tool.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p><b><u>Life Science</u></b></p> <p><b>1.4</b> Indicate knowledge of the difference between animate and inanimate objects, providing greater detail, and recognize that living things (humans, animals, and plants) undergo biological processes such as growth, illness, healing, and</p>	<p><b><u>Life Science</u></b></p> <p><b>1.3</b> Recognize that living things have habitats in different environments suited to their unique needs.</p> <p><b>1.1</b> Identify characteristics of a greater variety of animals and plants and demonstrate an</p>	<p><b><u>Earth Science</u></b></p> <p><b>1.1</b> Demonstrate increased ability to investigate and compare characteristics (size, weight, shape, color, texture) of earth materials such as sand, rocks, soil, water, and air.</p> <p><b>2.1</b> Demonstrate an increased ability to observe and describe</p>	<p><b><u>Physical Science</u></b></p> <p><b>1.1</b> Demonstrate increased ability to observe, investigate, and describe in greater detail the characteristics and physical properties of objects and of solid and nonsolid materials (size, weight, shape, color, texture, and sound).</p>

<p>dying.</p> <p><b>1.2</b> Indicate greater knowledge of body parts and processes (e.g., eating, sleeping, breathing, walking) in humans and other animals.</p> <p><b>2.2</b> Develop a greater understanding of the basic needs of humans, animals, and plants (e.g., food, water, sunshine, shelter).</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and an increased ability raise questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them in greater detail.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences in greater details.</p> <p><b>1.5</b> Demonstrate an increased ability to make predictions and check them (eg, may make more complex predictions, offer ways to test predictions, and discuss why predictions were correct or incorrect.)</p> <p><b>1.6</b> Demonstrate an increased</p>	<p>increased ability to categorize them.</p> <p><b>2.1</b> Observe and explore growth in humans, animals, and plants and demonstrate an increased understanding that living things change as they grow and go through transformations related to the life cycle (for example, from a caterpillar to butterfly).</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and an increased ability raise questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them in greater detail.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences in greater details.</p> <p><b>1.5</b> Demonstrate an increased ability to make predictions and check them (eg, may make more complex predictions, offer ways to test predictions, and discuss why predictions were correct or incorrect.)</p> <p><b>1.6</b> Demonstrate an increased ability to make inferences and form generalizations based on evidence.</p>	<p>natural objects in the sky and to notice patterns of movement and apparent changes in the sun and the moon.</p> <p><b>2.2</b> Demonstrate an increased ability to observe, describe, and discuss changes in weather.</p> <p><b>2.3</b> Demonstrate an increased ability to notice and describe the effects of weather and seasonal changes on their own lives and on plants and animals.</p> <p><b>2.4</b> Demonstrate an increased awareness and the ability to discuss in simple terms how to care for the environment, and participate in activities related to its care.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and an increased ability raise questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them in greater detail.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences in greater details.</p> <p><b>1.5</b> Demonstrate an increased</p>	<p><b>2.1</b> Demonstrate an increased awareness that objects and materials can change in various ways. Explore and describe in greater detail changes in objects and materials (rearrangement of parts; change in color, shape, texture, form, and temperature).</p> <p><b>2.2</b> Demonstrate an increased ability to observe and describe in greater detail the motion of objects (in terms of speed, direction, the ways things move), and to explore the effect of own actions on the motion of objects, including changes in speed and direction.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and an increased ability raise questions about objects and events in their environment.</p> <p><b>1.3</b> Identify and use a greater variety of observation and measurement tools. May spontaneously use an appropriate tool, though may still need adult support.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences in greater details.</p> <p><b>1.5</b> Demonstrate an increased</p>
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	ability to make inferences and form generalizations based on evidence.		ability to make predictions and check them (eg, may make more complex predictions, offer ways to test predictions, and discuss why predictions were correct or incorrect.)  <b>1.6</b> Demonstrate an increased ability to make inferences and form generalizations based on evidence.	ability to make predictions and check them (eg, may make more complex predictions, offer ways to test predictions, and discuss why predictions were correct or incorrect.)  <b>1.6</b> Demonstrate an increased ability to make inferences and form generalizations based on evidence.
<b>Pre-Kindergarten Science</b>				
	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
	<p><b><u>Life Science</u></b></p> <p><b>1.4</b> Indicate knowledge of the difference between animate objects (animals, people) and inanimate objects. For example, expect animate objects to initiate movement and to have different insides than inanimate objects.</p> <p><b>1.2</b> Begin to indicate knowledge of body parts and processes (e.g., eating, sleeping, breathing, walking) in humans and other animals.</p> <p><b>2.2</b> Recognize that animals and plants require care and begin to associate feeding and watering with the growth of humans,</p>	<p><b><u>Life Science</u></b></p> <p><b>1.3</b> Identify the habitats of people and familiar animals and plants in the environment and begin to realize that living things have habitats in different environments.</p> <p><b>1.1</b> Identify characteristics of a variety of animals and plants, including appearance (inside and outside) and behavior, and begin to categorize them</p> <p><b>2.1</b> Observe and explore growth and changes in humans, animals, and plants and demonstrate an understanding that living things change over time in size and in other capacities as they</p>	<p><b><u>Earth Science</u></b></p> <p><b>1.1</b> Investigate characteristics (size, weight, shape, color, texture) of earth materials such as sand, rocks, soil, water, and air.</p> <p><b>2.1</b> Observe and describe natural objects in the sky (sun, moon, stars, clouds) and how they appear to move and change.</p> <p><b>2.2</b> Notice and describe changes in weather.</p> <p><b>2.3</b> Begin to notice the effects of weather and seasonal changes on their own lives and on plants and animals.</p>	<p><b><u>Physical Science</u></b></p> <p><b>1.1</b> Observe, investigate, and identify the characteristics and physical properties of objects and of solid and nonsolid materials (size, weight, shape, color, texture, and sound).</p> <p><b>2.1</b> Demonstrate awareness that objects and materials can change; explore and describe changes in objects and materials (rearrangement of parts; change in color, shape, texture, temperature).</p> <p><b>2.2</b> Observe and describe the motion of objects (in terms of speed, direction, the ways things move), and explore the effect of own actions (e.g., pushing,</p>



	<p>animals, and plants.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and raise simple questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences.</p>	<p>grow.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and raise simple questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences.</p> <p><b>1.5</b> Make predictions and check them, with adult support, through concrete experiences.</p> <p><b>1.6</b> Make inferences and form generalizations based on evidence.</p>	<p><b>2.4</b> Develop awareness of the importance of caring for and respecting the environment, and participate in activities related to its care.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and raise simple questions about objects and events in their environment.</p> <p><b>1.3</b> Begin to identify and use, with adult support, some observation and measurement tools.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences.</p> <p><b>1.5</b> Make predictions and check them, with adult support, through concrete experiences.</p> <p><b>1.6</b> Make inferences and form generalizations based on evidence.</p>	<p>pulling, rolling, dropping) on making objects move.</p> <p><b><u>Scientific Inquiry</u></b></p> <p><b>1.1</b> Demonstrate curiosity and raise simple questions about objects and events in their environment.</p> <p><b>1.2</b> Observe objects and events in the environment and describe them.</p> <p><b>1.4</b> Compare and contrast objects and events and begin to describe similarities and differences.</p> <p><b>1.5</b> Make predictions and check them, with adult support, through concrete experiences.</p> <p><b>1.6</b> Make inferences and form generalizations based on evidence.</p>
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